

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A software update distribution system for distributing a software update over a communication network for distribution to client computers, comprising:

a root update service node; and

at least one child update service node;

wherein the root update service node and the at least one child update service node are organized in a hierarchical manner such that the root update service node is a parent update service node to at least one child update service node, wherein each update service node, except the root update service node, has a parent update service node, and wherein each of the at least one child update service nodes may also be a parent update service node to at least one other child update service node; and

wherein the root update service node obtains a software update from a software provider, and wherein each of the at least one child update service nodes obtains the software update for distribution to client computers by obtaining the software update from its parent software update node.

2. The software update distribution system of Claim 1, wherein the root update service node comprises:

an update store for storing software updates;

an update web service through which the root update service node distributes software updates to its child update service nodes over the communication network; and

a software provider interface through which a software provider submits its software update over the communication network to the root update distribution node.

3. The software update distribution system of Claim 2, wherein each of the at least one child update service nodes comprises:

an update store for storing software updates;

an update web service through which the child update service node obtains software updates from its parent update service node over the communication network, and through

which the child update service node distributes software updates to its child update service nodes over the communication network;

an administration application programming interface (API) through which an administrator, using an administration user interface, establishes rules for distributing software updates to its child update service nodes; and

a child update module for determining which software updates are available to be distributed to its child update service nodes according to the established rules.

4. The software update distribution system of Claim 3, wherein each of the at least one child update service nodes further comprises:

a reporting module for generating and sending update activity reports to the parent update service node;

an authentication and authorization module for determining whether an update service node is authorized to obtain software updates from the child update service node; and

a client update module for distributing software updates to client computers.

5. The software update distribution system of Claim 4, wherein the update store comprises an update content store in which the update payload for the software update is stored, and an update information store in which update metadata for the software update is stored.

6. The software update distribution system of Claim 5, wherein the child update service node obtains the software update from the parent update service by obtaining update metadata for the software update from the parent update service node, and separately obtaining the update payload for the software update from the parent update service node.

7. The software update distribution system of Claim 6, wherein the child update service node obtains the update payload for the software update from the parent update service node in a just-in-time fashion.

8. The software update distribution system of Claim 4, wherein the client update module distributes software updates to client computers according to rules established by an administrator via the administration API using the administration user interface.

9. The software update distribution system of Claim 8, wherein the root update service node further comprises a client update module for distributing software updates to client computers.

10. The software update distribution system of Claim 3, wherein the child update service node may be selectively configured to periodically obtain available software updates from the parent update service node.

11. An update service node for distributing software updates to client computers and to child update service nodes, comprising:

- an update store for storing software updates;

- an update web service through which the update service node obtains software updates from a parent update service node over a communication network, and through which the update service node distributes software updates to child update service nodes over the communication network;

- an administration application programming interface (API) through which an administrator, using an administration user interface, establishes rules for distributing software updates to the child update service nodes; and

- a child update module for determining which software updates are available to be distributed to the child update service nodes according to the established rules.

12. The update service node of Claim 11, further comprising:

- a reporting module for generating update activity reports to the parent update service node;

- an authentication and authorization module for determining whether a child update service node is authorized to obtain software updates from the update service node; and

- a client update module for distributing software updates to client computers.

13. The update service node of Claim 12, wherein the update store comprises an update content store in which the update payload for the software update is stored, and an update information store in which update metadata for the software update is stored.

14. The update service node of Claim 13, wherein the update service node obtains the software update from the parent update service by obtaining update metadata for the software update from the parent update service node, and separately obtaining the update payload for the software update from the parent update service node.

15. The update service node of Claim 14, wherein the update service node obtains the update payload for the software update from the parent update service node in a just-in-time fashion.

16. The update service node of Claim 12, wherein the update module distributes software updates to client computers according to rules established by an administrator via the administration API using the administration user interface.

17. The update service node of Claim 11, wherein the child update service node may be selectively configured to periodically obtain available software updates from the parent update service node.

18. A method for a child update service node to obtain a software update from a parent update service node in a software update distribution system over a communication network, the method comprising the steps of:

- (a) obtaining a list of software products from the parent update service node for which the parent update service node provides software updates;
- (b) selecting a software product from the list of software products;
- (c) submitting a request to the parent update service node for available software updates corresponding to the selected software product;
- (d) obtaining a software update list identifying software updates for the selected software product available to the child update service node;

(e) obtaining each software update in the software update list from the parent update service node.

19. The method of Claim 18, wherein obtaining each software update in the software update list from the parent update service node comprises:

obtaining metadata corresponding to the software update from the parent update service node; and

obtaining the update payload.

20. The method of Claim 19, wherein obtaining the update payload comprises obtaining the update payload in a just-in-time fashion when needed by a child update service node or a client update service node.

21. The method of Claim 20, wherein the request to the parent update service node for available software updates corresponding to the selected software product includes an update anchor, the update anchor identifying the latest revisions and updates for the selected software product currently available at the update service node.

22. The method of Claim 21 further comprising the step of first submitting an authentication and authorization request to the parent update service node, and obtaining an authorization token in response to the authentication and authorization request;

and wherein each subsequent communication from the child update service node to the parent update service node is made with the authorization token.

23. The method of Claim 28, wherein steps (a)-(e) are performed on a periodic basis.

24. A computer-readable medium bearing computer-executable instructions which, when executed on an update service computer, carry out the method comprising the steps of:

(a) obtaining a list of software products from the parent update service node for which the parent update service node provides software updates;

- (b) selecting a software product from the list of software products;
- (c) submitting a request to the parent update service node for available software updates corresponding to the selected software product;
- (d) obtaining a software update list identifying software updates for the selected software product available to the child update service node;
- (e) obtaining each software update in the software update list from the parent update service node.

25. A method for distributing software updates to a child update service node, executed on a parent update service node in a software update distribution system over a communication network, the method comprising:

- (a) receiving a request for a software update catalog from a child update service node, the software update catalog identifying software products for which the parent update service node provides software updates;
- (b) returning a software update catalog to the child update service node;
- (c) receiving a request for a list of software updates for a selected software product available for the child update service node;
- (d) determining whether any software updates for the selected software product are available for the child update service node;
- (e) returning a software update list identifying those software updates for the selected software product determined to be available for the child update service node to the child update service node, the software update list identifies available software updates according to a unique update identifier;
- (f) receiving an update request for metadata corresponding to an available software update from the child update service node, the update request identifying the available software update by its unique update identifier; and
- (g) returning update metadata corresponding to the software update identified in the update request, the update metadata including information corresponding to the software update including a reference for obtaining the corresponding update payload.

26. The method of Claim 25 further comprising:

prior to steps (a)-(g):

receiving an authentication and authorization request from the child update service node;

determining whether the child update service node is authorized to obtain software updates from the parent update service node; and

if the child update service node is authorized to obtain software updates from the parent update service node, returning an authorization token to the child update service node; and

wherein each subsequent communication from the child update service node to the parent update service node is made with the authorization token.

27. The method of Claim 26 further comprising:

receiving an update request for the update payload corresponding to the software update identified in the update request; and

returning the update payload corresponding to the software update identified in the update request.

28. The method of Claim 25, wherein the request for a list of software updates for a selected software product includes an update anchor identifying the latest update information on the child update service node corresponding to the selected software product; and

wherein determining whether any software updates for the selected software product are available for the child update service node comprises determining whether there are any updates available to the child update service node according to the update anchor and according to rules associated with the distribution of software updates to the child update service node.

29. A computer-readable medium bearing computer-executable instructions which, when executed on a parent update service computer, carry out the method comprising the steps of:

- (a) receiving a request for a software update catalog from a child update service node, the software update catalog identifying software products for which the parent update service node provides software updates;
- (b) returning a software update catalog to the child update service node;
- (c) receiving a request for a list of software updates for a selected software product available for the child update service node;
- (d) determining whether any software updates for the selected software product are available for the child update service node;
- (e) returning a software update list identifying those software updates for the selected software product determined to be available for the child update service node to the child update service node, the software update list identifies available software updates according to a unique update identifier;
- (f) receiving an update request for metadata corresponding to an available software update from the child update service node, the update request identifying the available software update by its unique update identifier; and
- (g) returning update metadata corresponding to the software update identified in the update request, the update metadata including information corresponding to the software update including a reference for obtaining the corresponding update payload.